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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,710	11/24/2003	Shu-Feng Lu	MR1957-803	9929

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ELLICOTT CITY, MD 21043

EXAMINER

DINH, DUC Q

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/718,710

Applicant(s)

LU, SHU-FENG

Examiner

DUC Q. DINH

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 2,3,5,10-12 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the Application filed on November 24, 2003. Claims 1-22 are pending in the Application and being examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 8, 9, 13, 16, 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shu (U.S Patent No. 6,188,393).

In reference to claim 1, Shu discloses in Fig.3 a third input device (scroller 20) used in a mouse (11 in Fig. 1) comprising:

a wheel holder (30) mounted on a bottom board inside said mouse (1);

a roller (60), said roller having a closed outer side, an inner side, and a receiving open chamber in said inner side (see roller 60 in Fig. 3);

an encoding wheel (encoder 73 in Fig. 3) mounted inside said roller (60) and pivoted with said roller (60) to said wheel holder (30), said encoding wheel having a mechanical tooth form (73); and

a locating plate (bracket 500) coupled to the inner side of said roller (6) for enabling said roller to be pivoted with said encoding wheel (73) to said wheel holder (30), said locating plate (50) holding a plurality of probes (55, 52 and 52') respectively disposed in contact with the tooth form of said encoding wheel (encoder 73 has plurality of teeth as shown in Fig. 3) and adapted to output a signal indicative of direction and amount of rotation of said encoding wheel and said roller (encoder 73 being engaged with the first teeth 72. The wheel hub 51 of the first shaft bracket 50 is inserted into the rotating wheel 70 such that the tops of first contact 52 and second contact 52' touch the encoder 73 or the first teeth 72, and the common contact 55 touches the encoder 73. Thus, the rotating wheel 70 and the encoder 73 can be rotated together with the roller 60 to transmit input signals by the common contact 55 and receive signals by the first contact 52 and the second 52'; col.2, line 64 through col. 3 lines 6).

In reference to claim 4, Shu discloses the encoding wheel (73 in Fig. 3) comprises a flat circular wheel body a plurality of radial teeth equiangularly spaced around the periphery of said flat circular wheel body and a plurality of peripheral notches (of the encoder 73 has plurality of teeth and notches as shown in Fig. 3) equiangularly spaced around the periphery of said flat circular wheel body and equally separated from one another by said radial teeth (see the encoder 73 in Fig. 3).

In reference to claim 8, Shu discloses the number of the probes is at least three (the bracket 50 having a common contact 55, a first contact 52 and a second contact 52').

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In reference to claim 9, Shu discloses a third axis input device (scroller 20 in Fig. 1) used in a mouse (11), comprising:

a wheel holder (30) mounted on a bottom board inside said mouse;

a roller (60 in Fig. 3), said roller having an outer closed side, and a receiving open chamber in an inner side thereof;

an encoding wheel (encoder 73) disposed inside said receiving open chamber of said roller (inner circumference of the roller 60), said encoding wheel comprising a flat circular wheel body a plurality of radial teeth equiangularly spaced around the periphery of said flat circular wheel body, and a plurality of peripheral notches equiangularly spaced around the periphery of said flat circular wheel body and equally separated from one another by said radial teeth (Fig. 3 shows encoder wheel 73 having plurality of radial teeth equiangularly spaced around the periphery of said flat circular wheel body, and a plurality of peripheral notches equiangularly spaced around the periphery of said flat circular wheel body and equally separated from one another by said radial teeth) ;

a locating plate (bracket 50) coupled to the inner side of said roller (60) to pivot said roller and said encoding wheel to said wheel holder; and a plurality of probes (55, 52, 52'; Fig. 3-6) respectively mounted on one side of said locating plate (bracket 50), disposed in contact with the radial teeth and peripheral notches (the encoder 73 have teeth and notches as shown in Figs. 3-4) of said encoding wheel and adapted to output a signal indicative of direction and amount of rotation of said encoding wheel and said roller (encoder 73 being engaged with the first teeth 72. The wheel hub 51 of the first shaft bracket 50 is inserted into the rotating wheel 70 such that the tops of first contact 52 and second contact 52' touch the encoder 73 or the first teeth

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72, and the common contact 55 touches the encoder 73. Thus, the rotating wheel 70 and the encoder 73 can be rotated together with the roller 60 to transmit input signals by the common contact 55 and receive signals by the first contact 52 and the second 52'; col.2, line 64 through col. 3 lines 6).

In reference to claim 13, Shu discloses the locating plate (bracket 50. in Fig. 3) comprises a retaining flange (support plates 53) protrude from an outer side thereof and fasten to said wheel holder 30 (two sides of the wheel hub 51 have respectively support plates 53, the inner wall of each support plate 53 having a sliding groove 54. The convex blocks 47 also are installed into the sliding grooves 54 so as to enable the first shaft bracket 50 to slide along the locating seat 40. The first shaft bracket 50 is stopped by the cover part 43 to prevent it from separating from the locating seat 40; col. 2, lines 50-56).

In reference to claim 16, Shu discloses the number of the probes is at least three (the bracket 50 having a common contact 55, a first contact 52 and a second contact 52').

In reference to claim 17, Shu discloses a third axis input device (scroller 20; Fig. 1) used in a mouse (11), comprising:

- a wheel holder (30) mounted on a bottom board inside said mouse (11; Fig. 3);

- a roller (60, Fig. 3) said roller having an outer closed side and a receiving open chamber in an inner side thereof;

- at least one probe wheel (bracket 50), said at least one probe wheel each having a plurality of probes (55, 52, 52'); and a locating plate (80) coupled to the inner side of said roller (60) to pivot said roller and said at least one probe wheel (52) to said wheel holder (30), said locating plate (80) holding a fixed encoding wheel (73 is engaged with the wheel 70 and fixed in

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groove 62; col. 2, lines 59-63) in contact with the probes (55, 52, 52') of said probe wheel (50) for outputting a signal indicated of the direction and amount of rotation of said roller (60) and said at least one probe wheel (50) relative to said wheel holder 30 (The wheel hub 51 of the first shaft bracket 50 is inserted into the rotating wheel 70 such that the tops of first contact 52 and second contact 52' touch the encoder 73 or the first teeth 72, and the common contact 55 touches the encoder 73. Thus, the rotating wheel 70 and the encoder 73 can be rotated together with the roller 60 to transmit input signals by the common contact 55 and receive signals by the first contact 52 and the second 52'; col.2, lines 64-col. 3, line 14).

In reference to claim 19, Shu discloses the probes (55, 52 and 52') is integral with the at least probe wheel (50 in Fig. 3).

In reference to claim 20, Shu discloses the number of the probes is at least three (the bracket 50 having a common contact 55, a first contact 52 and a second contact 52').

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-7, 14-15, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shu (U.S Patent No 6,188,393) in view of Tseng (GR 2321692).

In reference to claims 6 and 14, Shu does not disclose the probes are respectively formed of metal spring members. Tseng discloses a z-axis driver (6) using a metal spring members (3,4,5 in Fig. 3) as probes for contacting with the grid wheel (1; encoding wheel) to make electrical connections to output signal corresponding to the amount of movement so as to control the cursor on a display screen (Fig. 3, see page 3, lines 16-20).

It would have been obvious for one of ordinary skill in the art at the time of the invention to provide the metal spring members as probes, i.e. electrical contact for the encoding wheel, in the device of Shu as taught by Tseng so as to make the encoder wheel flexibly rotate on the Z axis of the mouse.

In reference to claims 7 and 15, Tseng discloses the probes are respectively formed of metal conductor members as discussed in claim 6.

In reference to claim 21, Shu discloses the encoder 73 comprise a common contact point in the middle of the encoder 73 (the encoder 73 can be rotated with the roller 60 to transmit signal by the common contact 55; Fig. 3, col. 3, lines 3-6), the conductive portion (the teeth portion of the encoder 73) and the portion 72 (of wheel 70) of the encoding wheel respectively in contact with the probes (55, 52 and 52') the probe wheel (bracket 50). Shu does not disclose the portion 72 of the wheel 70 which is engaged with the encoder 73 is an electrically insulating portion. Tseng discloses the grid wheel (1 in Fig 3) having conductive portion (111) and insulating portions (112) and annular portion (common contact portion 12) respectively disposed in contact with the metal spring strip 3, 4 and 5.

It would have been obvious for one of ordinary skill in the art at the time of the invention to recognize the portion 72 of the wheel 70 of Shu is an electrically insulating portion so as when

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the Z axis wheel is turned, the grid wheel (encoder) receives power from one or more metal strips (probes), the metal strips 3 and 5 (contact 52 and 52' of Shu) are moved over the conductive portion 111 and insulating 112 alternatively and provide respective output signal of a variable voltage; the output signal from the grid wheel (encoder) control the amount and direction of movement of the cursor on the display screen (see page 5 lines 16-22 of Tseng).

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shu (U.S Patent No. 6,188,393) in view of Chang (U.S Patent No. 6,285,355).

In reference to claim 22, Shu does not disclose the encoding wheel is formed of a circuit board and a cover plate. Chang discloses a Z-axis encoder having an encoding wheel (33) formed of a circuit board (col. 4, lines 1-3) and cover plate (30).

It would have been obvious for one of ordinary skill in the art at the time of the invention recognize the encoding wheel formed of a circuit board and a cover plate is well known and widely used in the third axis encoder wheel for computer mouse as discloses by Chang because it does not necessitate big change of any old mechanism (cover plate), circuit and component design (circuit board) in the conventional mouse and is therefore industrially practical for use (col. 2, lines 11-15 of Chang).

Allowable Subject Matter

8. Claims 2-3, 5, 10-12, 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter:
none of the cited arts teaches or suggests:

said roller has a center axle hole and a plurality of pins equiangularly spaced around said center axle hole for securing said encoding wheel. (claim 2 and 10)

said roller comprises a center axle hole, and a plurality of pins equiangularly spaced around said center axle hole and adapted to hold said at least one probe wheel. (claim 18)

said locating plate comprises a partition flange disposed at an inner side thereof, two locating pins provided at two sides of said partition flange and adapted to hold said probes, an axle perpendicularly extending from the center of the inner side and adapted to pivot said encoding wheel and said roller to said wheel holder. (claim 5 and 12)

Conclusion

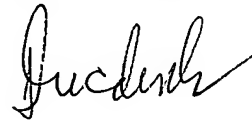
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUC Q DINH whose telephone number is (571) 272-7686. The examiner can normally be reached on Mon-Fri from 8:00.AM-4:00.PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DUC Q DINH
Examiner
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A handwritten signature in black ink, appearing to read 'Duc Q Dinh', written in a cursive style.

DQD
May 10, 2006